
LD 137: Core Input/Output Diagnostic

LD 137 provides IOP and CMDU related diagnostic and maintenance information for Option 11C, 51C, 61C, 81 and 81C machines with X11 Release 18 and later. Some commands in LD 37 can also be used. Refer to that program.

LD 137 provides a means of performing the following functions.

- enabling and disabling the CMDU and IOP cards
- displaying status and card ID for CMDU and IOP cards
- testing the IOP and CMDU (the hard and floppy disk drives are tested)
- testing individual disk drives
- enabling and disabling disk redundancy
- testing SCSI cable connections between IOPs and CMDUs
- testing disk synchronization on file or sector levels
- during midnight routines performs DATA CMDU, DATA RDUN commands
- displaying the Security Device Identification of the Security Dongle

The DATA CMDU AND DATA RDUN midnight routines are run every 5 days.

When a status appears disabled, one or more Out of Service (OOS) messages may appear. Listed below are the possible OOS messages:

- IOP out-of-service
- Unexpected interrupt fault monitor threshold exceeded
- Fault interrupt fault monitor threshold exceeded
- Processor exception fault monitor threshold exceeded
- ASIC interrupt fault monitor threshold exceeded
- Unrecognized error fault monitor threshold exceeded
- General event interrupt fault monitor threshold exceeded
- IOP not responding
- IOP disabled by craftsperson
- IOP responding but cannot be enabled
- CMDU out-of-service
- Hard disk read error
- Hard disk write error
- Hard disk drive error
- CMDU does not respond, the disk drive may be missing
- CMDU has been disabled by the craftsperson
- CMDU is disabled because the IOP is out-of-service
- Hard disk is inaccessible
- CMDUs are not synchronized
- CMDU status is mismatched because of a software error
- CMDU is in split mode
- CMDU is out of split mode
- No access to hard disk (HDK)

Basic Commands

DATA CMDU n	Perform read tests on the specified CMDU.
DATA CMDU n HDK, FDK	Perform read test on either the Hard Disk or Floppy Disk
DATA RDUN	Perform sector level checking on both hard disk
DIS CMDU n	Disable CMDU.
DIS ELNK	Disable the ethernet link on the active IOP pack
DIS IOP	Disable the active IOP and Ethernet
ENL CMDU n	Enable the CMDU.
ENL ELNK	Enable the ethernet link on the active IOP pack
ENL IOP	Enable IOP on the active Core and Ethernet
ENL HOST n	Add a host to run time host table
IDC	Print the IDs of both CMDUs and the active IOP
IDC CMDU n	Print the ID for the CMDU
IDC IOP	Print out the ID of the active IOP
SDID	Display Security Device Identification of Security Dongle(s)
STAT	Get status of IOPs, CMDUs and Ethernet.
STAT CMDU n	Get status of the CMDU.
STAT ELNK	Display status of the ethernet link on the active IOP pack whether enabled or disabled
STAT HOST	Display current run time host table status
STAT IOP	Display status of the active IOP and Ethernet
SWAP	Swap the CMDUs
SYNC	Synchronize the hard disks on both CMDUs
TEST CMDU n	Perform test for the CMDU.
TEST CMDU n HDK, FDK	Perform test on the Hard or Floppy Disk
TEST ELNK INT	Test internal loop-back on Ethernet link
TEST ELNK EXT	Test external loop-back on Ethernet link
TEST ELNK TDR	Test the Time Domain Reflectometry
TEST IOP	Perform the self test on the active IOP
TEST RDUN	Perform file level checking on both hard disks
TEST SCSI	Test the SCSI cables
TTY x	Test TTY x

Option 11C Commands

Command	Description
DIS ELNK	Disable ethernet link
ENL ELNK	Enable ethernet link
STAT	Get status of PPP and ethernet link
STAT ELNK	Display status of ethernet link

Alphabetical list of commands

Command	Description	Pack/Rel
DATA CMDU n	Perform read tests on the specified CMDU. This data validity check is performed on both hard and floppy disks. While the test is in progress, the CMDU is inaccessible. Progress messages are output. n = core number (0 or 1) If n is not entered, this command checks both CMDUs. This is more extensive than the TEST command, and may take longer.	basic-18
DATA CMDU n HDK, FDK	Perform read test on either the Hard Disk or Floppy Disk. This is a data validity check. While the test is in progress, the Disk is inaccessible. Where: n = Core number (0 or 1). You must enter the Core number. This is more extensive than the TEST command, and may take longer.	basic-18
DATA RDUN	Perform sector level checking on both hard disks. This test ensures that disk synchronization (disk redundancy) exists. It can only be performed when disk redundancy is enabled. All data is checked, on both disks, sector by sector. If the test fails, a CIOD message appears, and disk redundancy is disabled. This is more extensive than the TEST command, and may take longer. While this test is in progress, the disks are inaccessible.	basic-18
DIS CMDU n	Disable CMDU. Where: n = Core number (0 or 1). You must enter the Core number. If disk redundancy is currently enabled (both CMDUs are enabled and enabled), disabling the CMDU also disables disk redundancy. The confirmation is displayed: "CURRENTLY CMDU N IS ACTIVE. DISK RDUN WILL BE DISABLED. ENTER Y(ES) TO CONFIRM, N(O) TO ABORT." If the specified CMDU is in standby, its state is changed to disabled. If it is the active CMDU, it is disabled, and the standby CMDU becomes active.	basic-18

DIS ELNK	Disable the ethernet link on the active IOP pack. basic-22 An attempt is made to disable the Ethernet link. When the link is disabled, all activities will be terminated. The system displays OK to indicate that the link is disabled or FAIL to indicate that the link could not be disabled.
DIS IOP	Disable the active IOP and Ethernet. The LED is lit on the IOP faceplate and both CMDUs are inaccessible. basic-18
ENL CMDU n	Enable the CMDU. basic-18 Where: n = Core number (0 or 1). You must enter the Core number. When the first CMDU is enabled, that CMDU's state is ACTIVE. If a second ENL CMDU is attempted, a file level synchronization on both hard disks is performed first. If the synchronization (disk redundancy) does not exist, a CIOD error message is printed, and the second CMDU remains disabled. If the synchronization exists, the confirmation is displayed: "DISK RDUN WILL BE ENABLED, ENTER Y(ES) to CONFIRM, N(O) TO ABORT." When disk redundancy is successful, both CMDU states are Enabled. The CMDU enabled first is active, and the second is standby.
ENL ELNK	Enable the ethernet link on the active IOP pack. basic-22 If the Ethernet link is down, entering this command will cause an attempt to restore the Ethernet link to normal operation state. However, if the system cannot successfully restore the link, the Ethernet link will remain disabled. If the link was already up, this command does not affect the current operation of it. The system displays OK to indicate that the link is now enabled or FAIL to indicate that the link could not be enabled.
ENL HOST n	Add a host to run time host table. basic-22

ENL IOP	Enable IOP and Ethernet on the active Core. The LED is turned off on the IOP faceplate. The CMDUs are restored to the state they were in prior to the IOP being changed. However, if the cable between the IOPs is not connected, the CMDUs remain inaccessible until the cable is reattached. If both CMDUs were enabled, a file level synchronization check is performed prior to restoring states. If the synchronization (disk redundancy) does not exist, only the previously active CMDU is enabled.	basic-18
IDC	Print the IDs of both CMDUs and the active IOP. The printout appears in the following format: <pre>pppppppppp rrssss cccccccc</pre> Where: • pppppppppp = PEC code • rr = Release number • ssss = Serial number • cccccccc = Comments (not always be present)	basic-18
IDC CMDU n	Print the ID for the CMDU. Where: n = Core number (0 or 1). If n is not entered, card ID information is printed for both CMDUs.	basic-18
IDC IOP	Print out the ID of the active IOP.	basic-18
SDID	Display Security Device Identification of Security Dongle(s)	basic-23
STAT	Get status of IOPs, CMDUs and Ethernet. For the IOP, the Enabled or Disabled, and Active or Standby state is printed. Status is given for active and standby IOPs. For the CMDU, Disk redundancy, enabled/disabled, and active/standby status are printed. If Ethernet is disabled, the status (enabled or disabled) is displayed along with an OOS message. The status given for the standby IOP is a software status as it was last seen when that IOP was active. No hardware status is given because the standby IOP cannot be accessed. <i>For Option 11C:</i> The STAT command is used to get status of PPP and ELNK.	basic-18

If the status of the IOP or CMDU is disabled, one of the following OOS messages may appear:

- IOP out-of-service
- Unexpected interrupt fault monitor threshold exceeded
- Fault interrupt fault monitor threshold exceeded
- Processor exception fault monitor threshold exceeded
- ASIC interrupt fault monitor threshold exceeded
- Unrecognized error fault monitor threshold exceeded
- General event interrupt fault monitor threshold exceeded
- IOP not responding
- IOP disabled by craftsperson
- IOP responding but cannot be enabled
- CMDU out-of-service
- Hard disk read error
- Hard disk write error
- Hard disk drive error
- CMDU does not respond, the disk drive may be missing
- CMDU has been disabled by the craftsperson
- CMDU is disabled because the IOP is out-of-service
- Hard disk is inaccessible: CMDUs are not synchronized
- CMDU status is mismatched because of a software error
- CMDU is in split mode
- CMDU is out of split mode
- No access to hard disk (HDK)

STAT CMDU n Get status of the CMDU. Where: n = Core number (0 or 1). basic-18
If n is not entered, the status for both CMDUs is printed.

If the CMDU is disabled, one of the following CMDU OOS reason may appear:

- Hard disk read error
- Hard disk write error
- Hard disk drive error

- CMDU does not respond, the disk drive may be missing
- CMDU has been disabled by the craftsperson
- CMDU is disabled because the IOP is out-of-service
- Hard disk is inaccessible
- CMDUs are not synchronized
- CMDU status is mismatched because of a software error
- CMDU is in split mode
- CMDU is out of split mode
- No access to hard disk (HDK)

STAT ELNK Display status of the ethernet link on the active IOP pack whether enabled or disabled. The Ethernet address of this active Input Output Processor (IOP) is also displayed. basic-22

Since the Local Area Network Controller for Ethernet (LANCE) is equipped on the IOP, LANCE will be disabled when the IOP is disabled.

If the ethernet link is disabled, an OOS reason will be displayed containing the following information:

```
ELNK           ENABLED
Ethernet (In unit number 0):
Host: aaaxxx
Internet address:  xx.xxx.xx.xxx
Netmask:  xxxxxxxxxx ; Subnetmask: xxxxxxxxxx
xxx packets received ; xxx packets sent
x input errors ; x output errors
x collisions
```

STAT HOST Display current run time host table status. basic-22

STAT IOP Display status of the active IOP and Ethernet. basic-18

This command prints out the status whether the IOP is enabled or disabled. If it is disabled, the OOS reasons are printed. The following IOP OOS messages may appear:

- IOP out-of-service
- Unexpected interrupt fault monitor threshold exceeded
- Fault interrupt fault monitor threshold exceeded
- Processor exception fault monitor threshold exceeded

- ASIC interrupt fault monitor threshold exceeded
- Unrecognized error fault monitor threshold exceeded
- General event interrupt fault monitor threshold exceeded
- IOP not responding
- IOP disabled by craftsperson
- IOP responding but cannot be enabled

SWAP Swap the CMDUs. basic-18

After this command is issued, the active CMDU becomes standby, and the standby CMDU becomes active. This command is performed only when disk redundancy is enabled.

SYNC Synchronize the hard disks on both CMDUs. basic-18

This is a sector level synchronization. It is performed by copying the data from the active CMDU to the disabled CMDU, sector by sector. This can only be done when one CMDU is active and one is disabled.

The confirmation prompt appears when the system is ready to do the copying:

`"CMDU n ACTIVE HDK WILL BE COPIED AND DISK RDUN
WILL BE ENABLED. ENTER Y TO CONFIRM."`

Synchronization may take as long as 40 minutes. Progress reports appear on the TTY periodically.

TEST CMDU n Perform test for the CMDU. basic-18

This test includes a self-test, read/write capability test, and disk access test on both hard and floppy disks for this CMDU. While the test is in progress, the CMDU is inaccessible.

Where: n = Core number (0 or 1). You must enter the Core number.

A disk must be in the floppy drive when this test is run. If the floppy disk is not present, the floppy disk test will fail. The hard disk test will not be affected.

TEST CMDU n HDK, FDK	basic-18
Perform test on the Hard or Floppy Disk.	
This test includes a self-test, read/write capability test, and disk access test on either the hard or floppy disk drive for this CMDU. While the test is in progress, the CMDU is inaccessible.	
Where: n = Core number (0 or 1). You must enter the Core number.	
A disk must be in the floppy drive to test it. If a floppy disk is not present, the floppy disk test will fail. The hard disk test will not be affected.	
TEST ELNK EXT	basic-22
Test the external-loop back on Ethernet link.	
The result displayed can be either: PASS or FAIL . A pass indicates that the system can transmit its own transmitted packet and a fail means the opposite.	
TEST ELNK INT	basic-22
Test the internal-loop back on Ethernet link.	
The result displayed can be either: PASS or FAIL . A pass indicates that the system can receive its own transmitted packet and a fail means the opposite.	
TEST ELNK TDR	basic-22
Test the Time Domain Reflectory	
The displayed result is used to determine the location of suspected cable faults. A confirm message is displayed to ask the user to enter YES or NO. The entry YES tells the system to stop the Ethernet communication and perform a DTR. The entry NO tells the system to ignore the command.	
The Ethernet link remains disabled after this test. The user must enable it by command ENL ELNK.	
TEST IOP	basic-18
Perform the self test on the active IOP and internal loop-back test on Ethernet. The IOP must be disabled to perform this test.	
TEST RDUN	basic-18
Perform file level checking on both hard disks.	
This test ensures that disk synchronization exists. It can only be performed when disk redundancy is enabled. If the test fails, a CIOD message appears, and disk redundancy is disabled.	
While this test is in progress, the disk is inaccessible.	

TEST SCSI	Test the SCSI cables. This test ensures the cable connections between the IOPs are present. Access to the CMDUs is tested as well. If the test is successful, OK is printed. If the test is unsuccessful, CIOD messages are printed to indicate the problem.	basic-18
TTY x	Test TTY x. Response is: ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789"#\$%*!&()<>-.:,.? READY FOR INPUT Anything entered on the keyboard will be echoed until END is input.	basic-18
